2.0 THE RELATIONSHIPS BETWEEN PROPERTY RIGHTS AND EXTERNALITIES

Externalities arise when the production or consumption opportunities of individual members of society are directly affected by the resource allocation decisions of other members of society or, stated somewhat differently, when the exercising of acknowledged property rights by some individual members of society directly affects the profits or satisfaction which can be obtained by other members of society from the exercising of their acknowledged property rights. Thus, in virtually any realistic externality situation, a clear relationship will exist between the assignment of property rights which is established in this situation and the nature and extent of the externalities which prevail in the situation.

This chapter investigates the structure of this relationship. Specifically, Section 2.1 analyzes the economic aspects of the relationship between property rights and externalities; while Section 2.2 examines the prevailing and emerging judicial interpretations of the legal aspects of this relationship. Finally, Section 2.3 presents some general conclusions concerning the implications of these economic and legal analyses for the development of public policies for the control of externalities.

2.1 Economic Relationships Between Property Rights and Externalities

While economists traditionally have visualized the market mechanism as a process in which goods or services are exchanged by individuals, a more accurate representation of this mechanism would recognize that the items which actually are exchanged in the market are the rights to the possession and use of these goods and services. Thus, a market transaction essentially consists of an exchange of two bundles of property rights; and the value which is attached to any good whose ownership is modified by a market transaction depends crucially on the particular bundle of property rights to the possession and use of that good which is conveyed in that transaction.

In adopting this representation of the market exchange process, it is important to recognize that:

". . . property rights do not refer to relations between men and things, but, rather, to the sanctioned behavioral relations among men that arise from the existence of things and pertain to their use. Property rights assignments specify the norms of behavior with respect to things that each and every person must observe in his interactions with other persons, or bear the cost for nonobservance. The prevailing system of property rights in the community can be described, then, as the set of economic and social relations defining the position of each individual with respect to the utilization of scarce resources."*

To obtain a thorough appreciation of the practical significance of the distinctions which are drawn in this definition, it is useful to consider the implications for resource allocation of two polar forms of property right owner ship: communal owner ship and private owner ship. Under communal ownership, ". . . the community denies to the state or to individual citizens the right to interfere with any person's exercise of communally-owned rights;" while, under private ownership, ". . . the community recognizes the right of the owner to exclude others from exercising the owner's private rights."**

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*Furubotn and Pejovich (43), p. 1139. An essentially identical although less formal, definition of property rights appears in Demsetz (38), p. 347, where it is stated: "Property rights are an instrument of society and derive their significance from the fact that they help a man form those expectations which he can reasonably hold in his dealings with others. . . . An owner of property rights possesses the consent of fellowmen to allow him to act in particular ways. An owner expects the community to prevent others from interfering with his actions, provided that these actions are not prohibited in the specification of his rights. . . . It is clear, then, that property rights specify how persons may be benefited and harmed, and, therefore, who must pay whom to modify the actions taken by persons."

**Demsetz (38), p. 354. In this article, Demsetz also distinguishes a third basic form of ownership: state ownership. Under state ownership, ". . . the state may exclude anyone from the use of a right as long as the state follows accepted political procedures for determining who may not use state property." Detailed consideration of the resource allocation implications of this form of ownership will contribute very little to the analytical content of this report and, consequently, will not be pursued here.

2.1.1 The Resource Allocation Implications of Communal Ownership*

If a particular resource is communally owned, every member of the community possesses the right to use the resource. If a person refrains from exercising his right in any time period, the benefits attributable to this action in the form of an increased availability or productivity of the resource in future time periods do not accrue exclusively to that person, but, rather, accrue to all members of the community. Conversely, if a person attempts to maximize the value of his communal rights by utilizing the resource extensively in any time period, the costs associated with this action in the form of a decreased availability or productivity of the resource in future time periods are not incurred exclusively by that person but, rather, are incurred by all members of the community, Consequently, communal ownership encourages excessive utilization of a resource because this form of ownership fails to concentrate upon each person the costs, or benefits, which are associated with his exercising, or refraining from exercising, his communal rights.

In addition, to the extent that a communally-owned resource can be employed as an input into various production processes, the communal ownership of one resource can have substantial impacts upon the utilization of other privately-owned resources. Thus, the absence of exclusive rights to the use of a communally-owned resource will increase the cost of policing (i.e., detecting and capturing) the income which is generated by the privately-owned resources which are used in combination with the communally-owned resource. This increased policing cost will motivate users of the communally-owned resource to prefer to produce products whose physical attributes entail relatively low costs of policing the income generated by private investment inputs. For example, users of communally-owned land might choose to raise cattle rather than to plant potentially more lucrative corn merely because the cost of policing investment in corn, which is physically attached to the common land, is greater than the cost of policing investment in cattle, which can be driven home at night.

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*The material presented in this section has been abstracted from the following sources: Cheung (17), pp. 52-64; Demsetz (35), p. 17; Demsetz (36), p. 13; and Demsetz (38), pp. 354-355.

This change in the type of product which users of a particular resource choose to produce when the resource is communally-owned rather than privately-owned necessarily is associated with a change in the composition of private investment inputs, although it is impossible to determine a priori whether the total value of private investment will increase or decrease. Nevertheless, it is certain that, for any degree of competition, the economic rent of a resource will dissipate more rapidly when that resource is communally-owned than when it is privately-owned, since private ownership will induce the choice of that product whose production will maximize the economic rent of the resource.

Although this discussion of the implications of communal ownership for resource allocation is far from exhaustive, it clearly demonstrates that this form of ownership creates situations in which externalities abound. Thus, the production and consumption opportunities of individual members of the community are directly affected by the resource allocation decisions of other members of the community -- decisions over which the externally affected individuals have no control. Moreover, these external effects are not attributable to the changes in the equilibrium set of market prices which occur as the economy adjusts to changes in supply and demand conditions. Finally, these modifications of production and consumption opportunities do not arise from the performance of malicious actions by the other community members, but are produced only incidentally by these individuals in their pursuit of legitimate activities.

While these externalities conceivably can be mitigated if all members of the community mutually agree to restrict the exercising of their rights to the communally-owned resource and, hence, to curtail the rate at which each of them utilizes this resource, the negotiation and maintenance of an agreement of this type is extremely unlikely. Since each individual who declines to agree to restrict his use of the resource has the right to utilize the resource as intensively as he desires, there is little incentive for any member of the community to enter into a mutual accord. This inclination is reinforced by the knowledge that, if any group of individuals within the community does agree to limit their use of the resource, all of the cost associated with their foregone present utilization of the resource is incurred by the members of this group; while most, if not all, of the benefits associated with the increased present and future availability of the resource accrues to those

members of the community who have not joined in the agreement.* Similarly, since these same motivations will continue to prevail in the unlikely event that a mutual agreement of all members of the community is successfully negotiated, the maintenance of this agreement will require the allocation of a substantial portion of the community's resources to the enforcement of its stipulations. Finally, communal ownership provides no plausible mechanism through which the total expected benefits and the total expected costs which can accrue to future generations from their use of the communally-owned resource will be appropriately incorporated into the decision-making processes of the present users of the resource. Consequently, the occurrence of widespread intragenerational and intergenerational externalities appears to be virtually unavoidable under a regime of unconstrained communal ownership of resources.

2.1.2 The Resource Allocation Implications of Private Ownership**

If a particular resource is privately owned, the individual who owns the resource has control over the manner in which it is utilized, utilized.*** Thus, before any other individual or group of individuals may affect the use of the resource, that individual or group of individuals must obtain

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*Although it is conceivable that the members of the cooperative group will enjoy some increase in their utilization of the resource in future time periods; even if this result occurs, their increased future utilization of the resource will not exceed the increased future utilization of the resource which is obtained by those members of the community who have declined to join the group. Thus, each group member can obtain virtually the same future utilization of the resource and an increased present utilization of the resource if he individually withdraws from the group.

**The material presented in this section has been abstracted from Cheung (17), pp. 50-51 and p. 67; Demsetz (37), p. 62; and Demsetz (38), pp. 355-358, unless it is specifically attributed to another source.

***Furubotn and Pejovich (43), p. 1140, qualify this statement by pointing out that although the right of private ownership is an exclusive right, it is not an unrestricted right. Rather, the right of private ownership is exclusive ". . . in the sense that it is limited only by those restrictions that are explicitly stated in the law as it is interpreted from time to time."

the prior consent of the resource's owner, who is permitted to sell or transfer his right to control its use at his discretion. Consequently, in a society which relies exclusively upon the private ownership of resources, the public sector is required to perform only two functions. First, the government must determine which individual possesses the right to control the use of each of the society's scarce resources and hence, which individual may assert that his rights have been affected by others in any controversial situation. Second, the government must utilize the police power of the state to protect the rights which it has assigned or it must permit the owners of these rights to protect their rights by themselves.

If all of these conditions are satisfied, it becomes feasible for each resource owner to attempt to maximize his wealth by selecting from the set of alternative utilization patterns for his resources that utilization pattern which he believes will generate a future time stream of benefits and costs which will maximize the present value of his rights of private ownership. Since this maximal present value represents the amount of income which the resource owner expects to be able to receive in the market in exchange for his rights to use these resources and since this present value is partially determined by benefits and costs which are expected to accrue to these resources after the death of the resource owner, it is rational for each resource owner to attempt to incorporate into his current resource utilization decisions the supply and demand conditions which he expects to exist in future generations. Essentially, the resource owner acts as a broker whose wealth depends upon his effectiveness in reconciling the competing demands of present and future generations. In this manner, many of the intergenerational externalities which almost certainly will exist under a regime of communal ownership are internalized automatically under a regime of private ownership.

Similarly, the private ownership of resources promotes the internalization of many of the intragenerational externalities which normally arise under communal ownership. Since under private ownership each resource owner is permitted to exclude other individuals from the use of his resources, he generally is assured of securing the rewards which are generated by his allocation of these resources. This concentration upon the owner of a resource of the benefits and costs which are produced by his utilization of the resource provides substantial incentives to use resources more efficiently.

Yet, the assignment of private rights to control the use or resources does not necessarily produce the internalization of all externalities. Since the owner of the private rights to control the use of one set of resources cannot exclude other individuals from the use of resources which are owned by those other individuals, he has no direct incentive, in the absence of negotiations, to incorporate into his resource utilization decisions any consideration of the external effects which his utilization of his resources imposes upon the private rights of other individuals. Thus, even under private ownership, many externalities are expected to arise.

However, an externality which does arise under the private ownership of resources seldom affects all of the resource owners in the society. Consequently, in general, the internalization of an externality merely requires that an agreement which appropriately accounts for this external effect must be entered into and maintained by only a few resource owners. Hence, the cost of negotiating and policing the internalization of externalities is considerably lower under private ownership than it would be if resources were communally owned. Thus, somewhat paradoxically ". . . it can be seen that private rights can be socially useful precisely because they encourage persons to take account of social costs."* In fact, Demsetz has advanced the hypothesis that the development of new private property rights occurs for precisely this reason.**

The negotiated internalization of an externality can be accomplished through the application of either of two basic techniques: the establishment by all of the relevant resource owners of a contractual agreement which precisely stipulates the method of reconciling the external effects at issue or the outright purchase by some of the relevant resource owners of the private rights of the remaining relevant resource owners (i.e., the merger of the private rights of all of the relevant resource owners). If there are no economies or diseconomics of scale associated with the ownership of different sized bundles of rights and if only a single, readily enforceable contractual agreement

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*Alchian and Demsetz (1), p. 24.

**Demsetz asserts that ". . . property rights develop to internalize, externalities when the gains from internalization become larger than the cost of internalization. Increased internalization, in the main, results from changes in economic values, changes which stem from the development of new technology and the opening of new markets, changes to which old property rights are poorly attuned, "Demsetz (38), p. 350.

is required to internalize the externality, there is no comparative advantage to the selection of either internalization technique. However, if there are multiple externalities which require the negotiation of several contractual agreements or if contractual agreements are difficult to enforce, merger will tend to be the preferred internalization technique. Conversely, if there are substantial diseconomies of scale associated with the ownership of bundles of rights, interacting resource owners will be more likely to adopt contractual agreement as the preferred internalization technique. Thus, in general, the costs of negotiating and enforcing contractual agreements will be compared with those costs which depend upon the scale of ownership; bundles of rights will tend to be accumulated in sizes which minimize the sum of these costs; and contractual agreements to internalize the remaining external effects will tend to be arranged by the owners of these optimal sized bundles of rights.

Nevertheless, despite these extensive opportunities for the internalization of externalities without governmental intervention when resources are privately owned, it is virtually inevitable that some external effects will escape voluntary internalization under a regime of private owner ship. In particular, if a certain external effect impinges upon a large number of resource owners, the control of the activity which produces this external effect assumes the properties of a public good. It becomes rational for each resource owner who is externally affected by this activity to adopt the role of a “free rider” and to under state his willingness to pay for the optimal control of the activity. Since it is individually rational for each externally affected resource owner to behave in this fashion, the unavoidable consequence is the insufficient control of the externality-producing activity. Thus, in this situation, it is anticipated that an activity which generates external diseconomies will be pursued with excessive intensity; while an activity which creates external economies will be pursued with insufficient intensity. Consequently, even with private ownership of resources, it is extremely unlikely that the voluntary actions of resource owners will produce the internalization of all externalities. The obvious question which remains is: What action, if any, should be taken by the government to promote or require the internalization of these remaining externalities?

2.1.3 The Traditional Solution

The traditional solution to the problem of internalizing these remaining externalities has its origins in the writings of Pigou (85).

Pigou asserts that an economically efficient allocation of resources is attained by a society when its national dividend is maximized. Moreover, the national dividend will be maximized when the private marginal net product is equal to the social marginal net product in all uses. Thus, inefficiency exists in every activity in which this equality is not satisfied. To eliminate this inefficiency, Pigou proposes the provision of incentives which will induce those firms which are generating externalities to produce those levels of output which will maximize the national dividend.

More specifically, Pigou recommends the development of a system of taxes and subsidies which will modify the cost function of an externality-producing firm in a manner which will cause the firm's profit-maximizing output level to correspond to the socially optimal output level. This recommendation generally has been interpreted as a proposal that the price of the output of the firm should be modified to reflect more accurately the social marginal net product through the imposition of specific (per unit) excise taxes and subsidies upon this output. Thus, if the firm is generating an external diseconomy, a specific excise tax should be imposed to induce a reduction in output; while, if the firm is creating an external economy, a specific excise subsidy should be provided to motivate an increase in production.

Although this proposal does require that the calculation of the optimal taxes and subsidies must be performed by the government, it also permits all production decisions to be made by the individual firms. Therefore, this traditional solution to the problem of internalizing externalities maintains a substantially higher degree of decentralization of decision-making than most alternative public policies, such as the imposition of a system of standards or the legal prohibition of the generation of external effects.

2.1.4 The Coase Theorem

The traditional Pigouvian solution to the externality problem has been generally accepted by economists as the appropriate remedy for this problem from the time of its initial publication until 1960, when it has been seriously challenged by Coase (19). This challenge begins with the assertion that the traditional Pigouvian policy of imposing <u>unilateral</u> taxes and subsidies upon externality-generating firms is inappropriate because the adequate assessment of all of the social costs which are attributable to externalities requires a recognition of the reciprocal nature of any externality situation. Specifically, Coase declares:

> "The traditional approach has tended to obscure the nature of the choice that has to be made. The question is commonly thought of as one in which A inflicts harm on B and what has to be decided is: how should we restrain A? But this is wrong. We are dealing with a problem of a reciprocal nature. To avoid the harm to B would inflict harm on A. The real question that has to be decided is: should A be allowed to harm B or should B be allowed to harm A? The problem is to avoid the more serious harm."*

Thus, in any externality situation, the external effect is caused by both the resource owner who generates the effect and the resource owner who receives it. Consequently, if the optimal allocation of resources is to be attained, it is desirable that both of these resource owners should take account of the external effect in making their resource allocation decisions. In principle, this objective can be attained if an individual who desires to modify the behavior of another individual who is generating an externality engages in trade with that other individual which moves both of them to preferred positions where no additional mutually agreeable trades are available and, hence, Pareto optimal equilibrium prevails. The significance of this principle for public policy has been developed by Buchanan and Stubblebine; who conclude:

> "The important implication to be drawn is that full Pareto equilibrium can never be attained via the imposition of unilaterally imposed taxes and subsidies until all marginal externalities are eliminated. If a tax-subsidy method, rather than "trade" is to be introduced, it should involve bi-lateral taxes (subsidies). Not only must B's behavior be modified so as to insure that he will take the costs externally imposed on A into account, but A's behavior must be modified so as to insure that he will take the costs "internally" imposed on B into account. In such a double tax-subsidy scheme, the necessary Pareto conditions would be readily satisfied."**

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*Coase (19), pp. 1-2.
*Buchanan and Stubblebine (15), p. 383.

Having demonstrated this reciprocal nature of any externality situation, Coase uses this result to investigate the implications for resource allocation of different assignments of property rights in externality situations. This investigation concludes that, in the absence of any costs of negotiating and enforcing transactions, if property rights with respect to liability for the damages caused by an externality are clearly specified, transferable,* and rigidly enforced, any particular liability rule will produce an economically efficient allocation of resources. Specifically, when these conditions are satisfied, the stipulated liability rule will provide an incentive to one of the two parties who are involved in the externality situation to attempt to change the extent to which external effects are generated by offering inducements to the other party to modify his behavior. Thus, at the extremes, if the resource owner who produces an external effect is declared to be completely liable for the damages caused by this external effect, he will be motivated to pay an indemnity to the resource owner who receives the external effect to secure that resource owner's acquiescence to the production of additional output; while, conversely, if the resource owner who produces an external effect is declared to have no liability for the damages caused by this external effect, the resource owner who receives the external effect will be motivated to pay a bribe to the externality-producing resource owner to induce that resource owner to reduce his production. In either case, whenever the resource owner who produces the external effect decides to increase his production, he incurs a cost in the form of <u>either</u> an increased indemnity payment to <u>or</u> a foregone bribe payment from the resource owner who receives the effect. Similarly, whenever the resource owner who receives the external effect decides to decrease the extent to which he absorbs this effect, he incurs a cost in the form of <u>either</u> a foregone indemnity payment from <u>or</u> an increased bribe payment to the resource owner who produces the effect. Consequently, whenever either of these parties makes his resource allocation decisions, he appropriately incorporates the full social cost of his activities into his decision-making process. The inevitable result of this procedure is the attainment of an economically efficient allocation of resources.

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*Property rights with respect to liability for damages are transferable if the government enforces liability rules only upon appeal by one of the parties who are involved in the externality situation. This enforcement policy introduces the possibility of exchange between these parties.

Finally, Coase asserts that since the marginal cost associated with any particular increase in the production of an external effect is unaffected by the assignment of different liability rules, the same economically efficient allocation of resources will be attained regardless of the liability rule which is adopted, so long as the differences in the distributions of wealth which are associated with the various liability rules have no affect upon demand patterns. Thus, in summary, the Coase Theorem states that if the income elasticity of demand is zero in all markets (including the market for the external effect) and if the costs of negotiating and enforcing transactions are zero, the market resolution of any externality problem will be both economically efficient and allocatively neutral with respect to the assignment of liability.

Moreover, while Coase establishes the validity of this conclusion only for those assignments of property rights under which the resolution of an externality problem requires the unanimous consent of all of the resource owners who are involved in this problem through the negotiation of a mutually acceptable agreement, Buchanan demonstrates that, under the assumptions embodied in the derivation of the Coase Theorem, economic efficiency and allocative neutrality will be produced under a much broader range of property rights structures.* Thus, Buchanan proves that the same allocation of resources which is observed at equilibrium under the property rights structures analyzed by Coase will also be produced by a collective decision process which requires the unanimous consent of all members of the community to any change in the allocation of resources, a collective decision process which will perform a reallocation of resource with less than the unanimous consent of all members of the community (i.e., with the consent of a simple majority of the members of the community), or an administrative decision process in which the decision-maker maximizes the potential rent of his right to make the final resource allocation decision for the entire community. Moreover, Buchanan's proof of the applicability of the Coase Theorem under these additional structures of property rights relies merely on the same equilibrating mechanism hypothesized by Coase -- the transfer of income from resource owners who are adversely affected by a decision to at least some of the individuals who have control over the decision. For example, under an administrative decision process, the decision-maker can be

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*Buchanan (12), pp. 587-590.

induced to maximize the potential rent of his right to make a decision if he is permitted to collect and retain this rent in the form of personal side payments. Consequently, it appears that the conclusions of Coase's analysis will be valid for an extremely broad range of property rights structures.

However, subsequent researchers* have observed that several important assumptions which Coase has employed in his analysis are never stated explicitly in his discussion of this analysis. In particular, Coase implicitly has assumed that (1) the use of financial capital is a free good and, hence, is readily available to all resource owners for the payment of indemnities and bribes, (2) information concerning both current and future opportunity is perfect, and (3) perfect competition exists in all of the economic sectors which are involved in the externality situation. Obviously, these additional assumptions impose substantial restrictions upon the number of situations in which the Coase Theorem can be applied without qualification.

Moreover, and not surprisingly considering the profound impact which Coase's analysis has had upon the prevailing attitude of economists toward the appropriate treatment of externality situations, the preceding qualifications of the range of applicability of the Coase Theorem constitute relatively minor elements in the controversy which has developed in response to the publication of Coase's seminal article. Therefore, the remainder of this section is devoted to the explanation and reconciliation of the other aspects of this controversy.

2.1.5 Equity Considerations

Recognition of the reciprocal nature of externality leads reasonably directly to the conclusion that, in any particular externality situation, the same economically efficient allocation of resources will be attained regardless of the liability rule which is adopted. However, Mishan,** Randall,*** and Wellisz**** emphasize that this demonstration of the allocative neutrality of different liability rules does not constitute a demonstration of the ethical neutrality of these different rules. That is, the realization that, in a particular externality situation, the

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*See, for example, Randall (88), p. 44, and Samuels (97), p. 25.
**Mishan (77), pp. 78-81.
***Randall (88), p. 53.
****Wellisz (115), p. 353.

same composition of output will result if either the resource owner who produces the externality is required to pay an indemnity to the resource owner who receives it or the resource owner who receives the externality is required to pay a bribe to the resource owner who produces it does not necessarily imply that these two assignments of liability are equally socially desirable. Thus, for example, it appears unlikely that any reasonable society would consider to be socially acceptable either a liability rule which requires the victims of crime to bribe criminals to desist from their criminal activity or a liability rule which judges that little children hit automobiles in pedestrian crosswalks. Rather than being indifferent among various assignments of liability because of their demonstrated allocative neutrality, society may exhibit substantial differences in their preferences for these various liability rules for moral and ethical reasons.

Moreover, although the composition of output is independent of the assignment of liability in externality situations, the distribution of wealth is directly affected by the particular liability rule which is adopted. If the resource owner who produces an externality is declared not to be liable for the damages attributable to this external effect, his wealth will be greater than it would have been if he had been declared to be liable for these damages. Conversely, the wealth of the resource owner who receives the externality will be lower under the former liability rule than it will be under the latter. Consequently, citing the case of industrial pollution which affects neighboring resource owners, Randall* contends that because the owners of the industry which emits this pollution are likely to be more wealthy than the recipients of the pollution, a society which prefers a more nearly equal distribution of wealth would prefer, in this situation, the adoption of a structure of property rights which assigns liability for the damages caused by this pollution to the emitters of the pollution. Mishan** extends this argument by asserting that it may be generally desirable to assign liability for the damages attributable to a particular externality to the wealthier resource owner involved in that externality situation, because wealthy people have greater opportunities to take actions to avoid the adverse effects of any externality. Thus, the wealthy can move away from a polluted area; while the poor have less opportunity to change their locations. The implications of various liability rules for the distribution of wealth may be extremely important in determining their relative social desirability.

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*Randall (88), p. 41.
**Mishan (77), pp. 77-78.

2.1.6 Allocative Neutrality and the Distribution of Income

Coase's derivation of the allocative neutrality of alternative liability rules relies crucially upon the assumption that the amount of income which a resource owner is willing to pay to avoid incurring a particular damage is identical to the amount of income which that resource owner would be willing to accept as compensation for agreeing to incur that damage. If, as Coase's analysis assumes, all of the resource owners who are involved in the externality situation are business firms, this assumption is unobjectionable since both of these amounts of income will be equal to the incremental profit which the firm earns when this damage is avoided, which is independent of the firm's total profit level. However, if some of the resource owners who are involved in the externality situation are merely consumers, the identity of these two amounts of income will not necessarily exist for these individuals. As Dolbear* and Mishan** have demonstrated, if an individual's demand for a good increases as his income increases, the maximum amount of income which this individual is willing to pay for any given amount of the good or, alternatively, the minimum amount of income which he is willing to accept for foregoing this amount of the good will increase as his income increases. This proposition implies that, ceteris paribus, the maximum amount of income which the individual will pay for a unit of the good when he does not own this unit is generally less than the minimum amount of income that he will accept in exchange for this unit of the good when he does own it. Finally, this result leads to the crucial implication that different liability rules will produce different marginal valuations of externalities by consumers which, in turn, will result in different economically efficient allocations of resources at equilibrium.

Samuels*** and Weld**** lend further support to this conclusion by challenging the empirical validity of Coase's assumption that the income elasticity of demand for all goods is zero. If this assumption is not satisfied -- as it invariably will not be in actual externality

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*Dolbear (39), pp. 95-97 and p. 102.
**Mishan (77), pp. 61-66 and pp. 83-84.
***Samuels (97), pp. 6-12.
****Weld (114), p. 609.

situations -- the different distributions of income which result from different liability rules will generate different patterns of demand for goods which, in turn, will determine different economically efficient allocations of resources at equilibrium. Thus, in summary, the existence of consumers as resource owners in particular externality situations disaffirms the allocative neutrality of alternative liability rules in those situations.

Even accepting Coase's implicit assumption that all of the resource owners who are involved in externality situations are profit-maximizing business firms, several researchers have questioned the allocative neutrality of alternative liability rules in the long run on the basis of the different distributions of income which evolve under the various liability rules.* Specifically, these researchers have asserted that if the initial situation of the economy is one of long run perfectly competitive equilibrium in which those resource owners who produce externalities are not liable for the damages attributable to these externalities and if the society then adopts a new structure of property rights which declares that these externality-producing resource owners are liable for these damages, this modification of the prevailing liability rule will induce a change in the distribution of income which will result in the earning of negative profits by the resource owners who produce externalities and the earning of positive profits by the resource owners who receive externalities. In the long run, this profit disequilibrium will induce the allocation of additional resources to the activities controlled by the resource owners who receive externalities and the exit of resources from the activities managed by the resource owners who produce externalities. Thus, in the long run, the allocation of resources will be affected by the assignment of different liability rules.

Nutter** disputes this conclusion by demonstrating that this reallocation of resources will not occur in response to a modification of liability rules if each resource owner in an externality situation owns some non-transferable resources on which he earns sufficient Ricardian rent when he is not liable for the damages attributable to the externality that he will be able to pay for these damages without causing this rent

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*See, for example, Bramhall and Mills (9); Regan (90), p. 432; and Wellisz (115), p. 350.

**Nutter (82). This position is also acknowledged by Wellisz (37), p. 351.

to become negative when he is liable for damages. Moreover, Nutter contends that this situation generally will exist because ". . . a combination of activities generating a nuisance will not be introduced into a perfectly competitive economy unless that combination yields at least as large a net value of output as any other uses of the same resources would yield."*

Calabresi presents a more inclusive defense of the existence of allocative neutrality in the long run when he asserts that ". . . the same type of transactions which cured the short run misallocation would also occur to cure the long-run ones."** In particular, he contends that, under the assumptions of Coase's analysis (including the assumption that changes in the distribution of wealth have no effect on demand patterns), the resource owners who have gained wealth as a result of the modification of liability rules will be dissatisfied with the new allocation of resources and, hence, will bribe the resource owners who have lost wealth because of this restructuring of property rights to increase their production. This bribery process will continue until the initial allocation of resources is reestablished.

While this controversy concerning the allocative neutrality of alternative liability rules in the long-run has produced several intriguing theoretical arguments, it is important to remember that all of these arguments are based on the unrealistic assumption that all resource owners who are involved in any externality situation are profit-maximizing business firms. Consequently, the conclusions advocated in this controversy are of limited practical usefulness.

2.1.7 Allocative Neutrality and the Symmetry of Liability Rules

The demonstration of the allocative neutrality of alternative liability rules directly implies that both the policy of discouraging increases in the production of an externality through the imposition upon the producer of this externality of a charge equal to the value of the damages attributable to the externality and the policy of encouraging reductions in the production of the externality through the offering by the recipients

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*Nutter (82), p. 507.

**Calabresi (16), p. 67.

of the externality to its producer of a bribe equal to the value of the damages avoided are symmetric methods of internalizing the externality. However, considerable doubt has been cast upon the validity of this implication in the economic literature.

The most frequently asserted justification* for the contention that bribes and charges are asymmetric methods of internalizing externalities is based upon the recognition that the determination of the appropriate magnitude of either a bribe or a charge requires the comparison of the actual level at which an externality is produced to a specified base level of production of that externality. Although the development of an economically efficient charge mechanism is not difficult since no production of the externality constitutes an effective specified base level for a charge mechanism, the development of an economically efficient bribe mechanism is likely to be substantially more difficult. The specified base level of externality production for a bribe mechanism must be at least as great as the level which the producer of the externality would choose to produce in the absence of any internalization of the externality. To guarantee that this condition will be satisfied, the recipients of the externality (or, alternatively, the administrative authority which is responsible for the implementation of the bribe mechanism) must have complete knowledge of the cost constraints and revenue opportunities which confront the producer of the externality, While it is conceivable that an acceptable specified base level for a bribe mechanism might be determined initially, it is unlikely that this base level will be maintained at an effective level as the market conditions facing the externality producer change over time. If, at any time, the cost and revenue conditions confronting the producer of the externality cause his profit-maximizing production level to exceed the specified base level, the bribe mechanism will cease to be effective in inducing the internalization of the externality. Once again, to assure that the specified base level will be adjusted appropriately to avoid this outcome, it is required that the recipients of the externality must have complete knowledge of the profit opportunities of the externality producer. Since the likelihood that this condition will be satisfied is extremely low, the symmetry of bribes and charges is very unlikely to prevail.

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*This justification appears in Dolbear (39), pp. 100-101 and p. 103; Kamien, Schwartz, and Dolbear (53); Mumey (79); and Tybout (110), pp. 261-262.

Mumey* extends this argument by asserting that, with a bribe mechanism, it is conceivable that the producer of an externality will attempt to extract excessive bribes from the recipients of the externality by threatening to produce the externality at a level which exceeds the level at which he would choose to produce it in the absence of any internalization. If this strategy is generally adopted by the producers of externalities, the essentially coercive redistribution of income which will evolve from its application will have a noticeable impact upon the composition of the society's output unless the income elasticity of demand for all goods is zero.

A different and possibly more damaging criticism of the assertion that bribes and charges are symmetric methods of internalizing externalities is developed by Marchand and Russell (66), who demonstrate that these two techniques will produce the same economically efficient allocation of resources only if the cost functions of the recipients of the externality are separable (i.e., if the magnitude of the external cost which is imposed on each recipient by the externality is independent of the level of output which is produced by the recipient).** However, if the cost functions of the recipients are non-separable (i.e., if the magnitude of the external cost attributable to the externality is affected by the output decisions of the recipients), neither a bribe nor a charge will generate the optimal allocation of resources which evolves when both the producers and the recipients of the externality cooperate in the maximization of their joint profits. Instead, the adoption of a bribe mechanism will result in the production of an inefficiently high level of output by the producers of the externality and an inefficiently low level of production by the recipients of the externality. Conversely, the introduction of a charge mechanism will induce the production of an inefficiently low level of output by the producers of the externality and an inefficiently high level of production by the recipients of the externality.

Gifford and Stone (45) assert that all of the preceding refutations of the symmetry of bribes and charges can be circumvented by developing bribe or charge mechanisms which compare the level of profits which the recipients of the externality will earn if the production of the

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*Mumey (79), pp. 722-723.

*Formally, a cost function $C(q_1, q_2)$ is separable if it can be expressed in the form: $C(q_1, q_2) = C^1(q_1) + C^2(q_2)$.

externality is modified with a specified base level of the recipients' profits. Not surprisingly, the level of profits which accrue to the recipients when the externality is not produced constitutes an acceptable specified base level of profits for a charge mechanism; while the level of profits which accrue to the recipients when no internalization of the externality is undertaken constitutes an acceptable specified base level of profits for a bribe mechanism. However, it is important to recognize that the determination of these specified base profit levels requires not only complete knowledge of the cost and revenue conditions which confront the producers of the externality, but also complete knowledge of the profit opportunities which are available to the recipients of the externality. Since these information requirements are substantially more stringent than the information requirements of the standard bribe and charge mechanisms, it is even less likely that these new requirements will be satisfied in either a static or a dynamic context. Consequently, it appears reasonable to assert that, in general, asymmetry will exist between bribes and charges as mechanisms for the internalization of externalities.

2.1.8 The Need for Bi-Lateral Payments

As has been asserted previously, the recognition of the reciprocal nature of externality implies that the imposition of unilateral taxes or subsidies constitutes an ineffective technique for internalizing externalities. Specifically, it has been contended that if a community adopts a charge mechanism under which the recipients of an externality are not paid compensation for the externality which they receive at equilibrium, they will fail to recognize the full social cost associated with the imposition of more stringent restrictions upon the production of the externality and, hence, will be motivated to seek the adoption of these additional, inefficient restrictions. Consequently, to preclude this possibility, the imposition of bi-lateral taxes and subsidies has been recommended as the universally appropriate technique for the internalization of externalities.*

However, the implementation of this recommendation clearly is substantially more difficult than the implementation of the traditional Pigouvian solution. As explained by Regan:

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*This recommendation is proposed explicitly in Buchanan (13), p. 447; Buchanan and Stubblebine (15), p. 383; and Furubotn and Pejovich (43), p. 1142.

> "The reciprocal nature Of most externalities means that Pigou considerably underestimated the difficulty of finding regulatory (tax-subsidy) schemes which would guarantee internalization. . . . In general, to set up an appropriate tax-subsidy scheme might require as much information on the part of the regulating agency as would be required for centralized decision-making. The market-mechanism-plus-regulation, then, is no certain high road to efficiency."*

In addition, Baumol** contends that in those situations in which there arc a large number of recipients of an externality, the introduction of a charge mechanism under which the recipients are paid compensation for the externality which they receive is unnecessary. In these situations, the external effect constitutes a public externality and the control of the external effect constitutes a public good. Thus, Baumol asserts:

> "As with all public goods, an increase in one user's consumption does not reduce the available supply to others. Hence, the appropriate price (compensation) to a user of a public good (victim of a public externality) is zero except, of course, for lump sum payments. Thus, perhaps, rather than saying there is no price that will yield an optimal quantity of a public good (externality), it may be more illuminating to say that a double price is required: a nonzero price (tax) to the supplier of the good, and a zero price to the consumer. Of course, no ordinary price can do this job, but a Pigouvian tax, without compensation to those affected by an externality, can indeed do the trick."***

Finally, Marchand and Russell**** demonstrate that, if the cost functions of the recipients of an externality are non-separable, neither a bi-lateral bribe mechanism nor a bi-lateral charge mechanism will produce the optimal allocation of resources. Yet, in this same situation, an appropriate unilateral charge mechanism (a traditional

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*Regan (90), pp. 436-437.
**Baumol (4), pp. 309-312.
***Baumol (4), p. 312.
****Marchand and Russell (66), p. 615.

Pigouvian tax) can induce an internalization of the externality which will produce this optimal allocation of resources. Moreover, this unilateral charge mechanism can also be effective when the cost functions of the recipients of the externality are separable.

Consequently, it can be concluded that the imposition of bi-lateral taxes and subsidies does not constitute a universally appropriate technique for the internalization of externalities. Rather, in each externality situation, the appropriate internalization technqiue must be determined on the basis of such considerations as the cost conditions confronting the recipients of the externality, the number of recipients involved, and the administrative requirements associated with the implementation of the technique.

2.1.9 Transaction Costs and Allocative Neutrality

To derive the conclusion that the allocation of resources at equilibrium is unaffected by modifications of the prevailing liability rule, it is necessary to assume that there are no costs associated with performing transactions. However, in any realistic situation, it is extremely unlikely that this assumption will be satisfied. Therefore, since positive transaction costs inhibit exchange, in any realistic situation, the allocation of resources at equilibrium will be influenced by the particular liability rule which has been adopted. More specifically, in a particular externality situation, the production of the externality will be greater if the resource owner who produces the external effect is declared to have no liability for the damages attributable to this external effect than if this individual is declared to be completely liable for these damages. A change in the prevailing liability rule introduces new opportunities for mutually beneficial exchange and, consequently, produces alterations in the allocation of resources at equilibrium.*

Moreover, in any externality situation, the disparity between the allocations of resources which prevail at equilibrium under different liability rules will increase as transaction costs increase. In fact, it is conceivable that in some situations transaction costs may be so high that movements away from the initial allocation of resources which is specified by the liability rule may be impossible.

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*Samuels (97), pp. 19-20.

Finally, as the externality situation becomes more complex and as the number of resource owners who are involved in this situation increases, deviations from allocative neutrality are likely to expand. Thus, for those large-scale externality situations which are generally acknowledged to be social problems, it is virtually certain that different liability rules will generate different allocations of resources at equilibrium.*

2.1.10 Differential Transaction Costs and Alternative Liability Rules

Demsetz** asserts that the absence of an observable market for an externality may constitute an economically efficient outcome since, when this situation exists, the transaction costs which must be incurred to establish a market for this externality must exceed the benefits which will be obtained by society if this market is established. While this assertion will be unambiguously true if the same level of transaction costs must be incurred for all of the alternative liability rules which might be adopted in this externality situation, its validity is uncertain if different levels of transaction costs are associated with different liability rules.

Consequently, as McKean, *** Mishan, **** Randall, ***** and Samuels ****** have stated and Cracker (23) has demonstrated empirically, it is fallacious to conclude from an observation that no agreement has been negotiated for the internalization of a particular externality, that no agreement can be negotiated for the internalization of this externality. The adoption of a different liability rule which requires the incurring of a lower level of transaction costs than has been required under the initial liability rule may permit the negotiation of an agreement for the internalization of the externality which has been unattainable under the initial liability rule. Although each alternative liability rule will generate an economically efficient allocation of

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*Randall (88), pp. 43-44.
**Demsetz (35), pp. 13-14.
***McKean (70), pp. 625-626.
****Mishan (77), pp. 70-75.
*****Randall (88), pp. 45-46.
******Samuels (97), pp. 21-23.

resources relative to that liability rule, not all of these efficient allocations of resources will constitute a maximization of net social product.

Thus, if the maximization of net social product is desired, society must make a choice among different economically efficient allocations of resources. In addition, since it is possible that some type of non-market mechanism may involve a lower level of transaction costs than is attainable through a negotiated internalization of the externality under any liability rule, it is conceivable that the maximization of net social product may require the acceptance of some form of governmental intervention.*

2.1.11 Criteria for Choosing the Optimal Internalization Mechanism

The discussion in the preceding sections strongly indicates that, the Coase Theorem notwithstanding, it will be necessary for society to choose among alternative structures of property rights, alternative liability rules, and alternative forms of governmental intervention if the net social product is to be maximized. Moreover, if society desires a reasonable level of assurance that the particular internalization mechanism which it chooses to adopt has a satisfactorily high probability of achieving the maximization of net social product, the choice of this internalization mechanism must be based upon rational selection criteria. Consequently, numerous economic researcher** have proposed that, in any particular externality situation, a society should adopt that internalization mechanism which maximizes the difference between the benefits which will be obtained by the society if the mechanism is adopted and the costs which will be incurred by society if this alternative is chosen.*** Specifically, Demsetz asserts:

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*Demsetz (34), p. 34, Randall (88), pp. 45-46.

**See, for example, Calabresi (16), p. 69; Coase (19), p. 44; Demsetz (34), pp. 33-34; Demsetz (35), p. 19; and Furubotn and Pehovich (43), p, 1145.

*Samuels (97), pp. 23-25, correctly cautions that since the distribution of wealth is influenced by the structure of property rights and, in turn, the equilibrium set of market prices is influenced by the distribution of wealth, the utilization of any particular set of market prices to calculate these benefits and costs presupposes the legitimacy of a particular structure of property rights and potentially biases the results of the selection process in favor of that structure of rights. Obviously, a prudent decision-maker should take this potential bias into consideration before he decides to adopt any specific internalization mechanism.

> "If a net increase in the total value of property follows a change in the mix of rights, the change should be allowed if we seek to maximize wealth. Not to allow the change would be to refuse to generate a surplus of value sufficient to compensate those harmed by the change.*

However, in calculating the benefits and costs which will accrue to society if a particular internalization mechanism is adopted, these benefits and costs must be defined broadly if a reasonable probability of the selection of a socially desirable alternative is to be assured. Thus, it is important to incorporate into the selection process all of the following benefit and cost considerations.

2.1.11.1 The Costs of Defining, Policing, Exchanging, and Enforcing Property Rights**

If the internalization of a particular externality is to be performed through the assignment of property rights to that externality (i.e., the specification of a liability rule with respect to that externality) and the subsequent exchange of these property rights, several costs must be incurred. First, before any exchange can occur, costs must be incurred in defining the property rights which belong to each individual who is involved in the externality situation and in policing the exclusivity of these property rights. Second, if any mutual agreement concerning the internalization of the externality is to be attained, costs must be incurred in negotiating contracts for the exchange or transfer of property rights and, subsequently, in enforcing the contracts which have been negotiated. Obviously, all of these cost elements must be incorporated into the decision-making process which will select the appropriate internalization mechanism for this externality situation.

2.1.11.2 Information Requirements

The derivation of the economic efficiency of negotiated market solutions to externality problems depends critically upon the assumption that, in his decision-making processes, each resource owner who

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*Demsetz (35), p. 19.

**The material presented in this subsection has been abstracted from Cheung (17), pp. 67-68; Crocker (22), pp. 564-570; Crocker (23), pp. 461-464; and Demsetz (35), pp. 14-15.

is involved in an externality situation will consider as an opportunity cost the payments of bribes or indemnities which he will forego when he makes any specific resource utilization decision. However, Samuels contends that this assumption is unrealistic. Instead, he asserts, "Actual market costs depend in part on whose interests are made a cost to others, through rights."* Thus, a resource owner who produces an externality will be more likely to consider as a cost the damages which are attributable to this externality if the prevailing structure of property rights requires him to obtain from the resource owners who receive this externality consent to his production of the externality prior to this production than if the prevailing structure of property rights does not require this obtaining of prior consent. This conclusion is especially likely to be relevant if the resource owners who receive the externality never act[illegible] a bribe to the externality-producing resource owner when the latter structure of property rights prevails. Moreover, it is unlikely that a bribe actually will be offered by the resource owners who receive the externality if their number is sufficiently large that abatement of the externality assumes the nature of a public good. Consequently, inadequate information can be expected to cause economic inefficiency in the internalization of externalities through the negotiated exchange of property rights in numerous externality situations.

Conversely, Davis and Whinston*** demonstrate that the implementation of a taxation or subsidy mechanism for the internalization of an externality may impose upon the administrator of this mechanism information requirements which are so demanding as to preclude the adoption of this internalization mechanism. Specifically, the volume of information which must be collected and analyzed to implement a taxation or subsidy mechanism is likely to be sufficient to permit its administrator to determine directly the optimal resource utilization decision for each of the resource owners who is involved in the externality situation. When this outcome occurs, the direct specification of the optimal allocation of resources will be at least as tractable as the calculation of the appropriate tax and subsidy schedules. Moreover, this conclusion can be asserted with greater conviction if the cost

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*Samuels (97), p. 18.

**Davis and Whinston (31) and Davis and Whinston (32).

functions of the resource owners who are involved in the externality situation are non-separable than if these cost functions are separable.

Although Davis and Whinston do propose an iterative procedure for the determination of appropriate taxes and subsidies which circumvents most of these information collection and analysis requirements,* the implementation and operation of this procedure is not costless. Consequently, they conclude that in many externality situations the optimal public policy might be to permit the merger of the resource owners who are involved in the situation until the "natural unit" for decision-making has been achieved.**

Finally, Dolbear*** establishes that the implementation of a taxation or subsidy mechanism for the internalization of externalities in situations in which some or all of the resource owners who are involved in the situations are merely consumers generally will require the obtaining of detailed information about the nature of the preference function of each of these resource owners. Obviously, the collection of this information will be extremely expensive. In fact, it may be impracticable at any cost.

Consequently, it is impossible to assert that any specific internalization mechanism unambiguously requires the least costly amount of information in all externality situations. Rather, it must be concluded that the selection process which determines the internalization mechanism which will be adopted in any particular externality situation should carefully consider the information requirements associated with each of the alternative mechanisms which is available for adoption.

2.1.11.3 Uncertainty

The derivation of the Coase Theorem assumes that all of the consequences arising from the production of a particular externality are known with certainty by either the resource owners who produce the externality or the resource owners who receive the externality anti, hence, that all of the consequences will be incorporated appropriately into the negotiated agreement for the internalization of the externality. Yet, in practice, this assumption seldom will be satisfied in any realistic situation.

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*Davis and Whinston (32), pp. 312-316.
**Davis and Whinston (31), p. 261.
**Dolbear (39), pp. 97-99 and pp. 101-103.

Recognizing that this condition exists, Demsetz arrives at the following conclusion:

> "The greater the uncertainty of effect, the less inclined we should be to require that prior compensation be paid to those harmed or prior fees be charged of those benefited. The cost of sorting out and measuring legitimate claims in cases of great uncertainty would be so high as to undermine efficient resource use. . . . Innovation and change would be uneconomically hampered by the imposition of such costs in the presence of uncertainty."*

Conversely, Mishan** expresses a strong preference for the adoption of a liability rule which incorporates a strong bias against, or even an effective prohibition of, the production of externalities when substantial uncertainty exists. In fact, Mishan contends, "Insofar as the group concerned underestimates the effects on itself of a number of spillovers, the negotiated solution, even where practicable, is not satisfactory."***

To understand the basis for these diametrically opposed positions, it must be realized that Demsetz considers the uncertain effects to be relatively insignificant and reversible, while Mishan regards these effects as major and irreversible. A reconciliation of these polar attitudes is provided by Calabresi, **** who acknowledges that either of these conditions might prevail in different externality situations and, hence, that in any particular uncertain situation, society should adopt that liability rule for which the market is most likely to correct an error in the initial assignment of property rights. A generalization of this basic principle is provided by Cheung, ***** who suggests that, in any uncertain situation, the socially most desirable liability rule can be determined by comparing the risk associated with the adoption of each alternative liability rule with all of the other costs and benefits

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*Demsetz (37), p. 64. Demsetz later qualifies this conclusion by stating, "The requirement of prior compensation if those affected can be ascertained easily and the denial of prior compensation when those affected can be identified only with great difficulty does not deny the efficiency of requiring compensation in many of the uncertain cases after the fact."

**Mishan (77), pp. 81-82.

***Mishan (77), p. 81.

****Calabresi (16), pp. 69-70 and pp. 72-73.

******Cheung (18), pp. 24-29,

attributable to the adoption of that rule. Obviously, the application of this general principle is not limited solely to choices among alternative liability rules and, hence, can be extended to choices among all possible forms of internalization mechanisms.

This principle implies that, since all externality situations do not involve the same degree of uncertainty, different internalization mechanisms will be socially most desirable in different externality situations. Moreover, since different communities may exhibit different degrees of risk aversion, this principle implies that different communities rationally may adopt different internalization mechanisms for essentially identical externality situations.

2.1.11.4 Stability of Equilibrium

The derivation of the economic efficiency of the allocation of resources which arises under each alternative liability rule which is available for adoption requires only the application of comparative static techniques. However, the process through which each of these economically efficient allocations of resources is negotiated in the market is dynamic. Thus, Weld (114) contends that, in selecting among alternative liability rules, society should consider both the pattern of convergence to equilibrium and the speed of convergence to equilibrium which will prevail under each of these liability rules. In particular, he asserts that a minimal condition which must be satisfied by any acceptable liability rule is that, in response to any disturbance of an equilibrium which has been established under that liability rule, a new economically efficient allocation of resources will be negotiated. Moreover, he declares that the consideration of stability in the evaluation of alternative liability rules should not be restricted to a consideration of narrowly defined economic concepts of stability but, in addition, should include a consideration of the stability of legal, neighborhood, and societal interests. Obviously, these stability requirements are applicable not only to the evaluation of alternative liability rules, but can be applied with equal validity to the evaluation of other internalization mechanisms.

2.1.12 Implications for the Selection of Specific Internalization Mechanisms

If the selection criteria which have been described in the preceding section are acknowledge to be reasonable, it becomes justifiable to derive from these criteria-general recommendations for the selection of socially desirable internalization mechanisms. Thus,

Demsetz proposes that, in choosing the particular liability rule which is most likely to constitute the most effective mechanism for the internalization of externalities through the negotiation of mutual agreements in a specific externality situation, ". . .it will be efficient to assign new property rights in a way that is expected to minimize the cost of transacting that will be required subsequently."* For example, in an externality situation in which the number of resource owners who receive the externality is sufficiently large that the abatement of the externality assumes for them the nature of a public good, while the number of resource owners who produce the externality is sufficiently small that no significant public goods problem arises for them, liability for the damages attributable to the externality should be assigned to the resource owners who produce this external effect since this assignment of property rights will simultaneously minimize transaction costs and maximize the probability that the externality will be internalized through negotiated agreements.

The empirical validity of this proposal has been demonstrated by Crocker (23), who has isolated a specific situation in which the reassignment of liability for the damages attributable to air pollution from the recipients of this pollution to its emitters has substantially increased the extent to which agreements for the internalization of this externality have been negotiated. At a more conceptual level, Liebhafsky (61) has utilized this proposition to justify his assertion that, in any situation in which the assignment of liability for damages to the resource owners who receive an externality motivates these resource owners to bribe the resource owners who produce this externality to refrain completely from this production, the granting of an injunction which prohibits the production of the externality will be more economically efficient than the adoption of any liability rule. Finally, on the basis of this proposal, McKean (70) has developed a framework for the evaluation of the relative merits of a wide range of alternative assignments of liability for the damages attributable to product failure.

While all of these studies have applied the proposal that the socially most desirable alternative in an externality situation is that alternative which minimizes transactions costs only to choices among

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*Demsetz (37), p. 66. A similar proposal is advanced by Crocker (23), p. 464.

alternative liability rules, Cheung* contends that this proposal is equally applicable to choices between internalization mechanisms which rely sole1y upon negotiated agreements and internalization mechanisms which require governmental intervention. Moreover, he asserts that the application of this proposition to choices of this type generally will, result in the adoption of an internalization mechanism which relies solely upon the negotiation of mutually acceptable agreements. Cheung expects this outcome to prevail for two reasons. First, the voluntary exchange in organized markets of rights to produce, or to prevent the production of, externalities automatically generates information about the benefits and costs arising from the use of these rights. This information can be obtained only at considerable cost when the government regulates the use of these rights and, hence, completely voluntary exchange is precluded. Second, since the internalization of many externalities requires the simultaneous satisfaction of several equilibrium conditions, a single regulation, such as a specific excise tax or a specific excise subsidy, may be incapable of promoting internalization in many instances. Yet, in these same situations, a voluntarily negotiated agreement which contains multiple stipulations can produce an economically efficient allocation of resources. In general, an agreement of this type can be replaced only be a set of governmental regulations.

Although Cheung's reasoning undoubtedly is applicable in many externality situations in which only a small number of resource owners either produce or receive the externality, it clearly is inappropriate in those situations in which either the number of resource owners who produce the externality or the number of resource owners who receive the externality is sufficently large that the internalization of the externality assumes the nature of a public good. In this situation, the negotiation and enforcement of an internally consistent set of voluntarily negotiated agreements between <u>each</u> resource owner who produces an externality and <u>each</u> resource owner who receives this externality will be extremely expensive, if not impossible.

Recognizing this problem, Randall** asserts that, in any situation of this type, internalization of the externality requires either the

*Cheung (17), pp. 68-70.
**Randall (88), pp. 46-52.

establishment of a collective organization which includes as members all resource owners for which control of the externality constitutes a public good or the creation of a public administrative agency to represent the interests of these resource owners. Moreover, if a collective organization is established, this organization should not require that all of its members must consent to any action which it undertakes, since the transaction costs which are associated with the implementation of a unanimity requirement of this type will be essentially identical to the transaction costs which arise when each resource owner independently negotiates his own agreements for the internalization of the externality. Consequently, a collective organization should be permitted to undertake actions with less than the unanimous agreement of its members, despite the realization that any deviation from unanimity admits the possibility that economically inefficent actions might be undertaken.*

Similarly, although Buchanan** contends that, when transaction costs are nonexistent, the attainment of an economically efficient allocation of resources by a public administrative agency requires that the decision-maker who has the right to make the final resource allocation decision for the entire community must be able to collect and maintain the potential rent of this right in the form of personal side payments, he concedes that the prohibition of the collection of personal side payments by the decision-makers of public administrative agencies may be consistent with the attainment of economic efficiency when the internalization of the externality assumes some characteristics of a public good. When public goods problems arise, the resource owners who produce the externality and the resource owners who receive the externality will not be equally motivated to offer side payments to the relevant decision-maker and, hence, the permission of side payments may promote economic inefficiency.

Acknowledging the relative strengths and weaknesses of collective organizations and public administrative agencies, Randall concludes that, in general, as the number of resource owners who are involved in an externality situation increases, collective organizations become relatively less effective and public adminstrative agencies become

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*Buchanan (13), pp. 446-448 strongly supports Randall on this issue.

**Buchanan (12), pp. 589-594.

relatively more effective in performing the internalization of the externality. Moreover, he asserts that, if either a collective organization has been established or a public administrative agency has been created, it may be desirable to allow dissatisfied members of the group which is represented by the collective organization or public administrative agency "... to have individual access to the courts...to complain that the collective or agency has not acted appropriately."*

Finally, Baumol** demonstrates that if a particular externality is sufficiently strong, any specific internalization mechanism may generate any one of several different economically efficient allocations of resources. However, only one of these allocations of resources will constitute the socially desirable allocation relative to that internalization mechanism. Consequently, it is impossible to guarantee that the internalization mechanism will produce its socially most desirable allocation of resources. In this situation, Baumol recommends that society should specify a set of minimum standards of acceptability and, subsequently, seek to develop a taxation and subsidy mechanism which is capable of attaining these specified standards. A similar proposal is advanced by Dales (25), who asserts that the stringent information requirements of those mechanisms which provide for the complete internalization of externalities renders these mechanisms impossible to implement. Consequently, he concludes that the best available strategy for the control of an externality consists of the specification of a set of minimum standards of acceptability in the production of this externality, the creation of that quantity of rights to produce this externality which is consistent with these standards, and the establishment of a market in which these rights can be exchanged. Obviously, the prices which are established for these rights in this market are functionally equivalent to Baumol's taxes and subsidies as incentives for the attainment of the specified standards,

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*Randall (88), p. 52. Once again, Randall's position is consistent with that of Buchanan, who states, "In this setting, the only role of the judiciary should have been one of determining whether or not the decision taken by the legislature was made constitutionally." Buchanan (13), p. 449.

**Baumol (4), pp. 315-320.

2.1.13 Synthesis

The numberous and varied proposals which have been advanced for the adoption of particular internalization mechanisms in particular externality situations lead inevitably to the conclusion that there exists no single mechanism for the internalization of externalities which uniformly constitutes the socially most desirable internalization mechanism in all externality situations. Rather, the appropriate internalization mechanism for any particular externality situation can be determined only after a careful evaluation of the relative strengths and weaknesses of each available alternative internalization mechanism in that situation has been completed. For, as Coase asserts:

> "All solutions have costs and there is no reason to suppose that government regulation is called for simply because the problem is not well handled by the market or the firm. Satisfactory views on policy can only come from a patient study of how, in practice, the market, firms and governments handle the problem of harmful effects."*

Thus, since the costs and benefits which are attributable to the adoption of any particular internalization mechanism differ both among resource owners and among externality situations, it is reasonable for a variety of different internalization mechanisms to exist simultaneously.

2.2 Legal Relationships Between Property Rights and Externalities

The Restatement of Property defines "right" as "a legally enforceable claim of one person against another, that the other shall do a given act or shall not do a given act."** Therefore, "property rights" may be thought of in terms of the legal relationship (the rights and the duties) between a property owner and another person. One has a property right when one is able to legally compel another to do or not do a given act.

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*Coase (19), p. 17.

**Restatement of Property, Section 1.

When a person's activity causes damage to a landowner, the landowner may have a property right which can be invoked to force the person causing the damage to cease the activity and to compensate the landowner for any damage incurred. The law of nuisance is applied to determine whether the landowner does have a property right which has been violated. A private nuisance has been defined as "an interference with the use and enjoyment of land.* Courts have recognized their role in the area of nuisance as primarily resolving the conflict between two opposing principles of property law:

> "The land of nuisance plys between two antithetical extremes: The principle that every person is entitled to use his property for any purpose that he sees fit, and the opposing principle that everyone is bound to use his property in such a manner as not to injure the property or rights of his neighbor. For generations, courts, in their tasks of judging, have ruled on these extremes according to the wisdom of the day, and many have recognized that the contemporary view of public policy shifts from generation to generation."**

The purpose of Section 2.2.1 will be to examine the law of nuisance and attempt to observe the "judicial wisdom of the day."

Property rights may also be violated when the government attempts to regulate a landowner's use of his property. As in the area of nuisance law, two conflicting legal principles must be reconciled by the courts to determine whether a property right has been violated. The first principle is that the government does not violate any property rights when, through its inherent police power, it regulates the use of land to promote the health, safety, morals, and general welfare of the people. The second principle is that a property right exists which protects a landowner from the government's power of eminent domain unless his land is taken for a public purpose and only after just compensation is paid."*** The requirement of a public purpose has been

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*Prosser (87), Chapter 15, p. 591.

**Antonik v Chamberlain, 81 Ohio App. 465, 475, 78 N. E. 2d 752, 759 (Ct. App. Summit County 1547).

***For a discussion of just compensation, see Almota Farmers Elevator & Warehouse Co. v. United States 409 U.S. 470, 473-474 (1973).

expanded to include most governmental activities.* Thus, the conflict narrows to a discussion of whether the government action is regulatory, in which case no property right is involved, or whether it amounts to a taking, in which case a landowner has a property right to receive compensation. The conflict between taking and regulation will be examined in Section 2.2.2.

2.2.1 Externalities, Environmental Quality and Nuisance Law

Before examining nuisance law, a brief discussion of the court system in the United States is necessary. Actually, there are two court systems in the United States: federal and state. The federal courts have not decided many nuisance law cases. The very nature of the controversy -- a local, land related matter -- tends to eliminate the diversity of citizenship usually required for federal jurisidction in this area.

The state courts have decided most of the cases in the area of nuisance law. It should be emphasized that decisions in one state are not binding upon another state and, hence, have only persuasive value in any other state. This results in a lack of consistency in decisions throughout the United States. On the other hand, while differences exist among the states, certain nuisance law concepts seem applicable to nearly all jurisdictions.

Furthermore, even in a given state, a court may choose not to follow its earlier decisions under certain circumstances. Changes in economic or social conditions may compel a court to shift, if not totally reverse, its previously announced position. However, the doctrine of stare decisis -- an adherence to previous precedents -- tends to preserve consistency and stability in court decisions.

Therefore, when one considers the cases discussed in this report, both the independence of the state courts and the possible shift in a court's position over time must be kept in mind.

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*A "public purpose" in environmental cases has included a taking for: flood control (Ocean County v. Stockhold, 129 N. J. Super. 323 A. 2d 515 (1974)), scenic beauty (Wes Outdoor Advertising Co, v. Goldberg, 55 N. J. 347, 262 A. 2d 199 (1970)), and urban park (King County v. Farri, 7 Wash. App. 600, 501 P. 2d 612 (1972)).

The use of nuisance law as a deterrent to pollution and as a means to internalize the costs of land use has a long history beginning in English case law.* A private nuisance action has been used to abate nearly every common form of pollution: air,** water,*** solid waste,**** noise,***** and sight pollution.****** Private actions under nuisance law presently do not internalize all the costs of land use, nor can nuisance law as presently interpreted solve the major problems of our environment. However, private actions can complement government efforts.

An under standing of the private action in nuisance is essential to understanding the legal framework which permits some externalities. Furthermore, legislative acts can help to reduce some of the barriers erected by the common law, which may no longer be applicable in a society where greater exploitation of our natural resources may not promote social welfare.******* For these reasons, the elements of a private nuisance, the remedies available if a nuisance is found, and the defenses that the common law recognizes, all will be examined.

2.2.1.1 The Elements of a Private Nuisance

The Supreme Court in Euclid v Ambler******** has found that "a nuisance may be merely the right thing in the wrong place, like a pig in the parlor instead of the barnyard."********* Even a pig in the barnyard has been found to be a nuisance,********** but it cannot be denied that "a nuisance may undoubtedly arise from a land use incompatible with the surrounding neighborhood."*********** Thus, the first element of a nuisance is the unreasonable use of one's land as determined by the character of the neighborhood.

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*William Aldred's Case, 77 Eng. Rep. 816 (K.B. 1611). See Winfield (116) for a general history.

**Campbell v. Seaman, 63 N.Y. 568 (1876).

***Johnson v. City of Fairmont, 188 Minn. 451, 247 N. W. 577 (1933).

****Lind v. City of San Luis Obispo, 109 Cal. 340, 42 P. 437 (1895).

*****Hennessey v. Carmony, 50 N.J. Eq. 616, 25 A. 374 (1892).

******Note (80).

*******See note *** on p. 2.41 and accompanying text.

********Euclid v. Ambler Realty Co., 272 U.S. 365 (1926).

*********Id. at 388.

**********Baldwin v McClendon, 292 A1. 43, 288 So. 2d 761 (1974).

***********Township of Bedminster v. Vargo Dragway, Inc., 434 Pa. 100, 253 A. 2d 659 (1969).

Certain activities which may be perfectly reasonable in industrial areas or in the country are not suitable in residential communities. Courts have found that a powder mill, * a factory, ** or a stable*** if located in residential areas are nuisances, but these same activities are surely permissible in the proper setting.

Conversely,

> "It appears to be well settled that if one voluntarily elects to live in an industrial area, he cannot complain of noise, noxious odors or any other unpleasant factors that may arise from the normal operation of businesses in the area merely because they may interfere with his personal satisfaction or aesthetic enjoyment. It is said that no one can move into an area given over to foundaries and boiler shops and demand the quiet of a farm."****

Once it has been determined that the activity is unreasonable for the area, it must also be proven that the interference is substantial. For instance, a slight amount of noise or smoke is permissible,***** but the activity will be considered a nuisance if it is sufficient to "interfere with the ordinary comfort of human existence,"****** The Supreme Court of New Hampshire considered substantial harm to be that "in excess of the customary interferences a land user suffers in an organized society. It denotes an appreciable and tangible interference with a property interest."*******

Both of these required elements introduce the possibility that a landowner will be able to externalize the costs of his land use. The fact that the common law condones the reasonable use of one's land as determined by the character of the neighborhood, deprives the person who voluntarily or through economic necessity lives in a commercial area of a nuisance remedy. Therefore, potential polluters need only

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*Cumberland Torpedo Co. v. Gaines, 201 Ky. 88, 255 S.W. 1046 (1923).

**Riblet v. Spokane Portland Cement Co., 41 Wash. 2d 249, ,248 P. 2d 380 (1952).

***Johnson v. Drysdale, 66 S.D. 436, 285 M. W. 301 (1939).

****Lee v. Florida Public Utilities Co., 145 So. 2d 299, 301 (Fla. App, 1962).

*****Prosser (87), p. 79.

******Holman v . Athens Empire Laundry Co., 149 Ga. 345, 351, 100 S. E. 207, 2 10 (1919).

*******Roble v. Lillis, 112 N.H. 492, 299 A. 2d 155, 158 (1972).

locate in the proper area to be free from compensating their neighbors for the pollution they cause. The only apparent remedy appears to lie in governmental action.

The second requirement for a substantial interference also permits placing burdens upon neighboring landowners as long as one does not cause a substantial interference. However, advances in science which make detection of interference easier and prediction of the long-term harm more certain, possibly will reduce the landowner's ability to shift this burden upon his neighbors.

2.2.1.2 Remedies

Nuisance law permits two general forms of remedy, damages or injunctive relief. Normally, if damages can be ascertained, injunctive relief will not be available. Only if the damages cannot be determined or if the nuisance would require continued litigation will the court permit injunctive relief. These general principles, however, are not always applied. In two recent cases, Boomer v. Atlantic Cement Co.* and Baldwin v. McClendon, ** the courts permitted the payment of damages which would compensate the injured party, not only for the past and present, but for future injury as well. As the Court in Baldwin stated:

> "The damages awarded are measurable for all time.... In that case, the measure of damages for the nuisance, is the difference in the value of the property for a home with and without such odor."***

This result forces the landowner to shoulder the burden of his land use, at least to the extent that it diminishes the value of the adjoining property.

However, if damages are not ascertainable or the damage is likely to be a continuing one, forcing constant litigation, the court may enjoin the landowner from engaging in the activity. The Supreme Court of Pennsylvania, when confronted with a drag strip located in a residential community, found:

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*Boomer v. Atlantic Cement Co., 26 N.Y. 2d 219, 257 N. E. 2d 870, 309 N. Y. S. 2d 312 (1970).

**Baldwin v. McClendon, 292 Al. 43, 288 So. 2d 761 (1974).

***Id. at 767.

"No man has a right to take from another the enjoyment of the reasonable and essential comforts of life and, consequently, cannot commit acts on his own premises calculated to interfere with the reasonable enjoyment by others of their homes."*

The court granted the plaintiffs' request for an injunction against defendant's drag strip. There appears to be no discussion as to whether the plaintiffs' damages could be ascertained, but the damage appeared to be a continuing one.

One's remedy in nuisance law does tend to force a landowner to pay the costs of the use of his land. Assuming damages are properly measured, it would appear that the law, when it does find a nuisance, places the burden of external costs upon the land user. However, although all costs are internalized when injunctive relief is obtained, this remedy also embodies the possibility that the enjoined land user may be forced to discontinue an operation which could profitably be continued even if he were required to pay the external costs.

2.2.1.3 Defenses in the Nuisance Law

There are numerous occasions when a nuisance is found to exist, thus externalities are present, and the law does not provide the plaintiff with an injunctive remedy, and often not even with damages. There are three doctrines that a court may apply which prohibit recovery even after a nuisance is found: balancing the equities doctrine; coming to the nuisance doctrine; and the prescriptive easement.**

2.2.1.3.1 Balancing the Equities

The doctrine of balancing the equities sometimes requires a court to deny a remedy to the plaintiff even if a nuisance is proven. The courts have often examined the harm alleged by the plaintiff and compared it to the harm that the defendant and society would suffer if the defendant had to cease operations. Thus, in Clifton Iron Co. v.

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*Township of Bedminster v. Vargo Dragway, Inc., 434 Pa. 100, 253 A. 2d 659, 662 (1969).

**The general principles of laches may also bar recovery. See discussion of laches, Arnovitch v. Levy, 238 Minn. 237, 56 N.W. 2d 570, 574 (1953).

Dye,* the development of mining interests was judged to be more important than the pollution the defendant caused by his operations. Other earlier cases have similar holdings, but the most articulate may be found in Pennsylvania Coal Co, v. Sanderson:**

> "The plaintiff's grievance is for a mere personal inconvenience; and we are of the opinion that mere private personal inconveniences...must yield to the necessities of a great public industry, which, although in the hands of a private corporation, subserves a great public interest. To encourage the development of the great natural resources of a country trifling inconveniences to particular persons must sometimes give way to the necessity of a great community."***

The defendant not only was encouraged to continue his activity, but the plaintiff was not even given money damages. When society's interests are aligned with the defendant, the balance of equities invariably will favor the polluter and not the plaintiff seeking relief.

Similarly, the defendant's own financial interests must be examined to determine:

> "If the resulting damage...because of the nuisance cannot be avoided, or only at such expense as would be practically prohibitive to a person in the enjoyment of his own land, he (the defendant) may not be required to abate the nuisance."****

In this recent Pennsylvania case, the Commonwealth was attempting to stop the pollution of a stream, but lost because of its inability to formulate a practical plan of abatement.

*Clifton Iron Co. v. Dye, 87 Ala. 468, 6 So. 192 (1888) and see 40 ALR 3d 601.

**Pennsylvania Coal Co. v. Sanderson 113 Pa. 126, 6A. 453 (1886).

***Id. at 149, 6A. 459.

****Commonwealth v. Wyeth Laboratories, 12 Pa. Cmwlth Ct. 327, 315 A. 2d 648, 653 (1974).

There have been a few early cases which supported the plaintiff's right to have the nuisance abated without balancing the equities.* However, in many jurisdictions these cases have been ignored** and in the majority of jurisdictions the balancing doctrine is applied.***

Balancing the equities permits externalities to continue, as long as courts view society's interest in terms of exploitation of natural resources and increased production. Society's real interest (e.g., protecting the environment) may lie in granting the injunction and stopping the pollution. Courts have so far been unwilling to weigh society's intangible interests against the tangible economic detriment to the defendant and community.

2.2.1.3.2 Coming to the Nuisance

The coming to the nuisance doctrine prevents the plaintiff from recovering because:

> "One who voluntarily places himself in a situation whereby he suffers an injury will not be heard to say that his damage is due to the nuisance maintained by another."****

The parallels between this doctrine and the reasonable use requirement for finding the existence of a nuisance are readily apparent. Both permit a nuisance to continue if it has been established in the locality.

Apparently, the only element that the defendant must prove is that the plaintiff knew of the nuisance when he came to the locality. Thus, a person who moves next to a golf course cannot complain that golf balls are falling on his property.*****

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*Wente v. Commonwealth Fuel Co., 232 Ill. 526, 83 N.E. 1049 (1908); Hennessey v. Carmony, 50 N. J. Eq. 616, 25 A. 374 (1892); Sullivan v. Jones & Laughlin Steel Co., 208 Pa. 540, 57 A. 1065 (1904); Whaland v. Union Bag & Paper Co., 208 N. Y. 1, 101 N. E. 805 (1913).

**Haack v. Lindsay Light & Chemical Co., 393 Ill. 367, 66 N. E. 2d 391 (1946); Boomer, supra note * on p. 2.39.

***See 40 ALR 3d 601.

****Oetjen v. Goff Kirby Co., 38 Ohio L. Abs. 117, 124, 49 N. E. 2d 95, 99 (Ct. App. Cuyahoga County, 1942).

*****Patton v. Westwood Country Club, 18 Ohio App. 2d 137, 247 N. E. 2d 761 (1969).

The coming to the nuisance doctrine gives a polluter of long standing almost blanket protection against successful attack under the nuisance law, thus permitting the externality to continue ad infinitum.

2.2.1.3.3 Prescriptive Easement

If the polluter has been engaged in his activity long enough, he may be able to continue the activity because he has a prescriptive right. One commentator has described the situation as follows:

> "If the pollution has been continuing for some time, the polluter's wrongdoing may have ripened into a judicially protected right... which... rewards wrongdoers who are patient, persistent, and non-reforming."*

There are at least two elements which a polluter must prove in order to establish a prescriptive easement. First, there must be a continuous polluting activity through time and, second, there must exist a definite level of pollutants over time.** A recent Oregon case demonstrates how a court may liberally interpret these requirements and thus permit the polluting activity to continue.*** The plaintiff's land was periodically flooded because of a dam built upon the defendant's property. The court found that there was continuous polluting activity, even though there were intervals between the flooding of as long as a year or two. The court also discussed the need for a definite level of pollutants and concluded:

> "All that is necessary to meet the requirement of definiteness where there is a variation in the area invaded is that the maximum or outer limits of the interference be established."****

The prescriptive easement may have the same effect as the coming to the nuisance doctrine, namely, once the pollution has occurred

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*Juergensmeyer (52), p. 1136.

**See West Kentucky Coal Co. v. Rudd, 328 S.W. 2d 156, 160 (Ky. 1959).

***Arrien v. Levanger, 263 Or. 363, 502 P.2d 573 (1972).

****Id. at 575.

for a long enough period, the nuisance laws may not provide a remedy, thus permitting the externality to continue. Legislative changes of these common law defenses would increase the ability of private individuals to correct environmental problems.

2.2.1.4 Nuisance Actions Against the Government

Up until this point it has been assumed that the tort feasor in the nuisance action was a private party. A nuisance action may also be instituted against most government entities. The private nuisance law that the court will apply should not differ depending upon the nature of the defendant. However, some government entities have retained all or part of their sovereign immunity from tort liability which may bar recovery.

The Federal government has permitted tort suits against it in the Federal Tort Claims Act, with certain important limitations.* First, claims cannot be based upon the exercise or failure to exercise a discretionary function.** Second, the courts have required that negligence or wrongdoing must be alleged.*** However, beyond these exceptions,

> "The United States shall be liable respecting the provisions of this title relating to tort claims, in the same manner and to the same extent as a private individual under like circumstances..."****

The situation regarding state immunity varies from jurisdiction to jurisdiction. Some jurisdictions, like Washington, have no sovereign immunity,***** while other states have no immunity but have Tort Acts

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*28 U.S.C. §1346 (1970).
**28 U.S.C. §2680 (1970).
***See Dalehite v. United States, 346 U.S. 15, 44 (1953).
****28 U.S.C. §2674 (1970).
*****Wash. Rev. Code S4. 92.090 (Supp. 1971).

similar to the Federal legislation.* Even where tort liability is permitted, the state may have retained immunity if a discretionary function is involved or if a statute authorizes the nuisance.

Clearly attempting to internalize the costs of the government's use of land is more difficult than in private cases. However, success against government entities under a nuisance is possible and has been obtained.**

2.2.2 The Inherent Conflict: Taking Versus the Police Power

It was seen in the area of nuisance law that the courts recognized two conflicting principles: the right of a landowner to use his land and the duty of a landowner not to interfere with the rights of others. The resolution of this conflict by the courts permitted numerous instances of externalities, either because a nuisance was not present or because a defense was available to the polluter.

The property rights of a private landowner in relationship to the government also contain conflicting legal principles. Government has the inherent right to protect the health, safety, morals, and general welfare of the people. The police power was described by the Supreme Court as:

> "One of the most essential powers of government, one that is least limitable. It may, indeed, seem harsh in its exercise, usually is on some individual, but the imperative necessity for its existence precludes any limitation upon it when not exerted arbitrarily."***

Thus, the police power should be a formidable tool for government to regulate the use of land, and is a basic part of the property relationship between the government and a private landowner.

The Fifth Amendment of the Constitution of the United States prohibits the taking of property without just compensation. This provision is a "seemingly absolute protection" against the possibility of

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*Cal. Gov't. Code §§810-895.8 (West 1966).

**See Nestle v. City of Santa Monica, 6 Cal. 3d 920, 496 P. 2d 480, 101 Cal. Rptr. 568 (1972).

***Hadachek v. Sebastian, 239 U.S. 394, 410 (1915).

the government appropriating a private party's property without compensating the owner.* It too is a basic part of the property relationship between the government and a private landowner.

In Pennsylvania Coal Co. v. Mahon,** the Supreme Court found that the police power qualifies the protection granted under the Fifth Amendment. Justice Holmes, speaking for the Court, concluded:

> "The natural tendency of human nature is to extend the qualification more and more until at last private property disappears. . . We are in danger of forgetting that a strong public desire to improve the public condition is not enough to warrant achieving the desire by a shorter cut than the constitutional way of paying for the change."***

Since the decision in Pennsylvania Coal Company the state courts have struggled to strike the proper balance between the police power qualification and the seemingly absolute prohibition against taking property without paying just compensation. As in the area of nuisance law, since the state courts are independent, there is a lack of uniformity among the state decisions.

A further complication in this area exists because many states have constitutional provisions similar to the Fifth Amendment prohibition against taking, while other states have prohibitions not only against taking, but also against damaging one's property without compensating the owner.**** Normally in the context of environmental quality this distinction is unimportant, but the reader should be aware that state constitutional provisions do exist that are somewhat different from those of the Fifth Amendment.

Numerous commentators have attempted to rationalize the cases which involve the conflict between a government's ability to regulate

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*Pennsylvania Coal Co. v. Mahon, 260 U.S. 393, 413 (1922).

**Id.

***Id. at 413.

****See P. Nichols, Eminent Domain, §6.1 (3rd Rev.) 1974.

and its inability to take private property without just compensation.* Numerous tests have been devised, all seemingly unable to reconcile the court decisions.** For organizational purposes, the cases will be divided between those where diminution of property values was considered a taking requiring compensation and those where the diminution was permissible under the police power.

2.2.2.1 Diminution of Property Value Sufficient for Taking

The Supreme Court, in Pennsylvania Coal Co. v. Mahon, stated the diminution of value test:

> "Government hardly could go on if, to some extent, values incident to property could not be diminished without paying for every such change in the general law...One fact for consideration... is the extent of the diminution. When it reaches a certain magnitude, in most cases if not all cases there must be an exercise of eminent domain and compensation to sustain the act."***

Since the Pennsylvania Coal decision, courts have strived to determine what magnitude of diminution is the "certain magnitude" mentioned by Justice Holmes. Courts have concluded that neither financial hardship nor substantial diminution is sufficient for a taking, but have instead required "a property owner be unable, permanently, to use his property... and is therefore deprived of all beneficial use thereof..."**** Despite what appears to be an insurmountable burden for a plaintiff, many property owners in environmental cases have succeeded in satistying the test.

In Morris County Land Improvement Co. v. Township of Parsippany-Troy Hills,***** zoning regulations had created a meadowlands to promote flood control. The uses permitted the plaintiff were

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*See Michelman (73).

**Id. at 1202.

***260 U.S. at 413.

****Bureau of Mines of Maryland v. George's Creek Coal and Land Co., Md., 321 A. 2d 748, 762 (1974) and cases cited therein.

*****40 N.J. 539, 193 A.2d 232 (1963).

very limited and severely reduced the property's value. The New Jersey Supreme Court concluded that the regulations "are clearly far too restrictive and as such are constitutionally unreasonable and confiscatory."* The court, in determining the property's value, examined not only its present value as a swamp, but its potential value if filled. For that reason there was a great diminution of value, which resulted in a taking without compensation as opposed to a permissible regulation.

In State v. Johnson,** the State Wetlands Control Board attempted to prohibit the filling of coastal wetlands. The landowner argued that such a regulation made his property "commercially valueless land."*** The Supreme Court of Maine agreed, holding that the prohibition amounted to a taking of property without just compensation, and an unreasonable exercise of the police power. As in the Morris case, the value of the property included its potential after land fill.

In Dooley v. Town Plan and Zoning Commission of Town of Fairfield,**** the plaintiff's property was zoned as a flood plain with a limited number of uses, and in fact, the court found that "use of the plaintiff's land has been, for all practical purposes, rendered impossible."***** The diminution in value was estimated to be approximately 75 percent, which the Supreme Court of Connecticut found to be a taking without just compensation.

A case which also found that the zoning board had exceeded its police power was Vernon Parking Realty Co. v. City of Mount Vernon.****** This case differed from those previously discussed in that it attempted to maintain a commercial use which was considered beneficial. The plaintiff's property was used as a parking garage and the zoning board wanted to assure future parking availability so it designated a downtown area which included palintiff's property as a "Designated Parking District." The court found that the restriction "destroyed the greater part of the value of the property,"******* forcing him to carry the burden of providing parking.

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*193 A.2d at 242.
**265 A.2d 711 (Me. 1970).
***Id. at 716.
****151 Conn. 304, 197 A.2d 770 (1964).
*****197 A.2d at 772.
******307 N.Y. 493, 121 N.E. 2d 517 (1954).
*******121 N.E. 2d at 520.

Even when a zoning board attempts to plan growth in a community, a substantial diminution of plaintiff's property for an unreasonable period of time is considered a taking without just compensation. In Averne Bay Construction Co. v. Thatcher,* the plaintiff owned land in Brooklyn which was zoned residential. There was no current demand for housing and no demand was expected for some time. The New York Court of Appeals permitted the plaintiff to build a gas station, arguing that only temporary diminution of value was permissible under the police power.

Zoning plans have also been held to go beyond the police power when they indirectly depress the price of the plaintiff's property. In Miller v. Beaver Falls,** the plaintiff's land was planned as a park, thus greatly reducing its present value. The court found this diminution was a taking requiring compensation and not a valid exercise of the police power.

The effect of these decisions on the governmental cost of providing environmental quality is clearly adverse. Cases like Morris County, Dooley, and Johnson hinder government's efforts to protect the population and the environment from the hazards of flooding. On the other hand, permitting the regulation would place an unreasonable, burden on an individual for a benefit that the entire society will receive.

Cases like Miller and Averne Bay reduce a government's ability to rationally plan for future growth. The result of these types of cases is to permit urban sprawl. But, again, permitting the regulation appears to place a great burden upon the individual for the benefit of society in general.

2.2.2.2 Diminution in Value Without a Taking

An early case permitting extreme diminution of value within the police power was Hadachek v. Sebastian.*** Despite the plaintiff's loss of nearly 90 percent of the value of his property, the court found

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*278 N.Y. 222, 15 N.E. 2d 587 (1938).
**368 Pa. 189, 82 A.2d 34 (1951).
***Hadachek v. Sebastian, 239 U.S. 394, 410 (1915).

no taking, commenting that the exercise of the police power is sometimes "harsh."

Recently, courts have again begun to permit substantial diminution, verging on total deprivation, without compensation. The zoning board, in Turnpike Realty Co. v. Town of Dedham,* established a flood plain district very similar to the cases just mentioned. However, the result was vastly different. The diminution of the plaintiff's land was approximately 90 percent, but the Massachusetts Supreme Court concluded:

> "We realize that it is often extremely difficult to determine the precise line where regulation ends and confiscation begins. The result depends on the 'peculiar circumstances of the particular instance'. . . In the case at bar we are unable to conclude, even though the judge found a substantial diminution in the value of petitioner's land, that the decrease was such to render it an unconstitutional deprivation of property."**

The Massachusetts Supreme Court's analysis is not vastly different from those earlier cases discussing diminution. The only difference is that it expands police power qualification of the Fifth Amendment prohibition against taking without just compensation. Clearly, environmental quality can be improved under the existing legal system if a court follows the Massachusetts example of expanding the police power.

A Wisconsin case, Just v. Marinette County,*** approaches the diminution problem from a different perspective. In Just, the plaintiff attempted to fill some property along a shoreline. However, this filling was prohibited by the zoning ordinance. The zoning board fined the Justs and the conviction was appealed. The court basically redefined the proper value that should be considered in determining whether there has been a substantial diminution of value.

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*284 N.E. 2d 891 (Mass. 1972).

**Id. at 894.

***56 Wis. 2d 7, 201 N.W. 2d 761 (1972).

> "The Justs argue their property has been severely depreciated in value. But this depreciation of value is not based on the use of the land in its natural state but on what the land would be worth if it could be filled and used for the location of a dwelling. While loss of value is to be considered in determining whether a restriction is a constructive taking, value based on changing the character of the land at the expense of harm to public rights is not an essential factor or controlling."*

Thus, the court found that the "natural use" value of the property should be considered in determining whether or not there was substantial diminution of value.

In Golden v. Planning Board of Town of Ramapo,** the court reevaluated the effect of a comprehensive growth plan. The court found that the plan was necessary since present municipal services were inadequate. Despite a finding that the regulations were substantial and might prevent development for 18 years, the court found a valid exercise of the police power since the taking was not absolute. The court's analysis did not differ from Averne which was cited in support of the court's position. The real difference rested upon the court's determination that 18 years was a reasonable period of restriction.

These three cases represent a new approach to environmental problems in the context of the taking issue. The Just case may be especially significant, in that not only does it view regulation in terms of the "natural use" of the land, but its method of valuation of the property would permit greater purchases by the government.

The Ramapo decision may also be significant to the extent that courts will permit longer periods in which the owner may be deprived of any economic use of his property. These periods would hopefully permit more effective planning by zoning boards.

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*Id. at 23, Id. at 771.
**30 N.Y. 2d 359, 334 N.Y.S. 2d 138, 285 N.E. 2d 291 (1972).

While these decisions may promote environmental quality by prohibiting land uses that were previously permitted, they do not effectively force the internalization of land use costs. Rather, decisions like Just and Turnpike Realty merely deprive an owner of the use of his land, even in situations where the landowner could afford to pay the full costs of the land use. Similarly, Ramapo acts as a total deprivation during the planning years, even in those situations where the prospective land use is economically capable of paying its full costs.

2.2.3 Synthesis

An examination of both nuisance law and governmental regulations, as permitted by the courts today, allows a number of conclusions. First, there are significant barriers to an effective remedy in a private nuisance action. Legislative initiative may be able to reduce, if not eliminate, the major problems. However, once the court decides to grant relief, nuisance law is a relatively effective method of internalizing land use costs. Decisions like Boomer and Baldwin may provide an alternative to the sometimes harsh remedy of granting injunctive relief, and serve the purpose of internalizing most of the costs of land use.

Second, the ability of the government to protect the environment through police power regulations may be increasing because of the greater awareness of environmental problems. However, regulation, in the nature of total prohibition, seems ill-suited to an efficient economic system. Total prohibition does not discriminate between land uses capable of paying their total costs and uses which are incapable of doing so. Thus, traditional notions of property rights tend to perpetuate the externalization of costs and environmental deterioration.

2.3 Conclusions

The preceding legal analysis clearly demonstrates that neither the prevailing nor the emerging judicial interpretations of property rights are capable of producing an economically efficient resolution of all externality situations. Moreover, the economic analysis of Section 2.2 establishes the impossibility of developing any single mechanism for the internalization of externalities which will uniformly be the socially most desirable internalization mechanism in all externality situations.

Consequently, in any specific externality situation, the identification of the most appropriate internalization mechanism must rely upon a careful evaluation of the relative strengths and weaknesses of all feasible alternative internalization mechanisms which might be implemented in that situation. Recognizing that substantial differences exist between the characteristics of different externality situations, it is not unreasonable to expect that the application of this method of identifying the socially most desirable internalization mechanism for each particular externality situation will result in the simultaneous implementation of a variety of different internalization mechanisms in different situations.